HT32F1765
Starter Kit User Manual

Revision: V1.00 Date: July 17, 2015

www.holtek.com

Table of Contents

1 Introduction 5
Features 6

2 Hardware Layout 7
Boot Option – JP7, JP6 9
V_{BAT} Option – JP9 9
LED Option – JP2, JP11 10
High Speed External Crystal Oscillator (HSE) Option - JP1, JP5 11
Low Speed External Crystal Oscillator (LSE) Option – JP3, JP4 11
USB Option – JP10 11
SWD-10P Connector – JP26 12
Adjustment SWD-10P Connector (for e-Link32 Lite) – JP27 13
Extension Connector 1 – J31 14
Extension Connector 2 – J32 15
Mini USB Type B Connector – U3 16

3 Schematics 17

List of Figures

Figure 1. HT32F1765 Starter Kit 5
Figure 2. HT32F1765 Starter Kit Block Diagram 7
Figure 3. HT32F1765 Starter Kit Layout 8
Figure 4. SWD-10P Connector 12
Figure 5. Adjustment SWD-10P Connector 13
Figure 6. Extension Connector 1 14
Figure 7. Extension Connector 2 15
Figure 8. Mini USB Type B Connector 16
Figure 9. MCU, Boot Pins, SWD Connector, Extension Connector, LED and the Power 18
Figure 10. e-Link32 Lite 19

List of Tables

Table 1. Boot Jumpers 9
Table 2. V_{BAT} Jumpers 9
Table 3. LED1 Jumpers 10
Table 4. LED2 Jumpers 10
Table 5. HSE Jumpers 11
Table 6. LSE Jumpers 11
Table 7. USB Jumpers 11
Table 8. SWD-10P Connector 12
Table 9. Adjustment SWD-10P Connector 13
Table 10. Extension Connector 1 14
Table 11. Extension Connector 2 15
Table 12. Mini USB Type B Connector 16

1 Introduction

The HT32F1765 Starter Kit is based around the 32-bit ARM Cortex™-M3 high performance microcontroller and is designed to assist users to get up and running with this device as quickly as possible. It provides a complete solution from evaluation, programming to production.

The Starter Kit is based on the Cortex™-M3 high speed microcontroller, the operating frequency is up to 72MHz. It provides 128 KB of embedded Flash memory, 64 KB of embedded SRAM memory, multiple Timers, dual I²C interfaces, dual SPI interfaces, dual USART interfaces, 12-bit A/D converter, 80 programmable general purpose I/O pins and a USB function which can be used to interface to a wide range of external devices.

This development platform is composed of a Target Board and Serial-Wire Debugger (e-Link32 Lite) and as such requires no external debugging equipment. It can use the Target Board external power supply or be powered by the Debugger.

The Starter Kit provides a standard C language program development environment for Keil µVision and IAR EWARM. With this basis, Holtek also provides a complete function library to avoid complicated lower level function development in order to allow development designers to focus on the needs of their application development. Using a simple USB cable connection, users only have to connect their PC to the integrated hardware debug interface (Serial-Wire Debugger), to automatically download the programs and immediately commence debug operations.

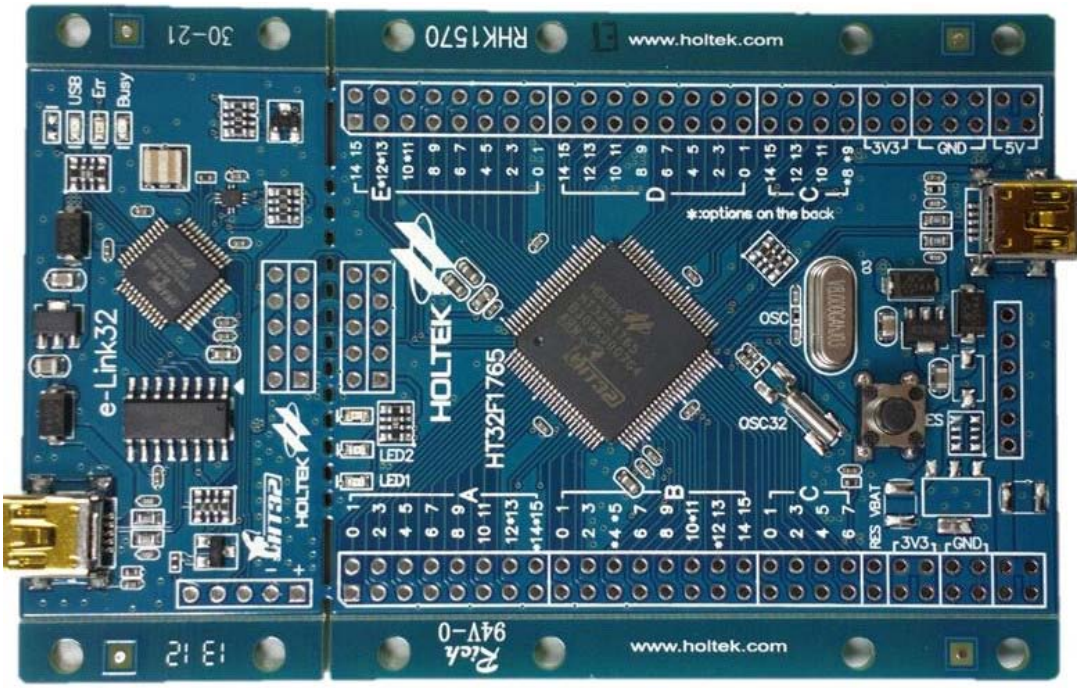


Figure 1. HT32F1765 Starter Kit

Features

- Using HT32F1765 high performance microcontroller
  - Up to 72 MHz operating frequency
  - 128 KB Flash, 64 KB SRAM
  - Integrated multiple Timers, dual I^2C functions, dual SPI functions, dual USART functions, single 12-bit A/D converter and USB function
  - LQFP100 package
  - 8 MHz external crystal clock
  - 80 programmable general purpose I/O pins
- Comprises Target Board and Serial-Wire Debugger
- Can be used for the testing and development of many external devices
- Can use the Target Board external power supply or be powered by the Debugger

2 Hardware Layout

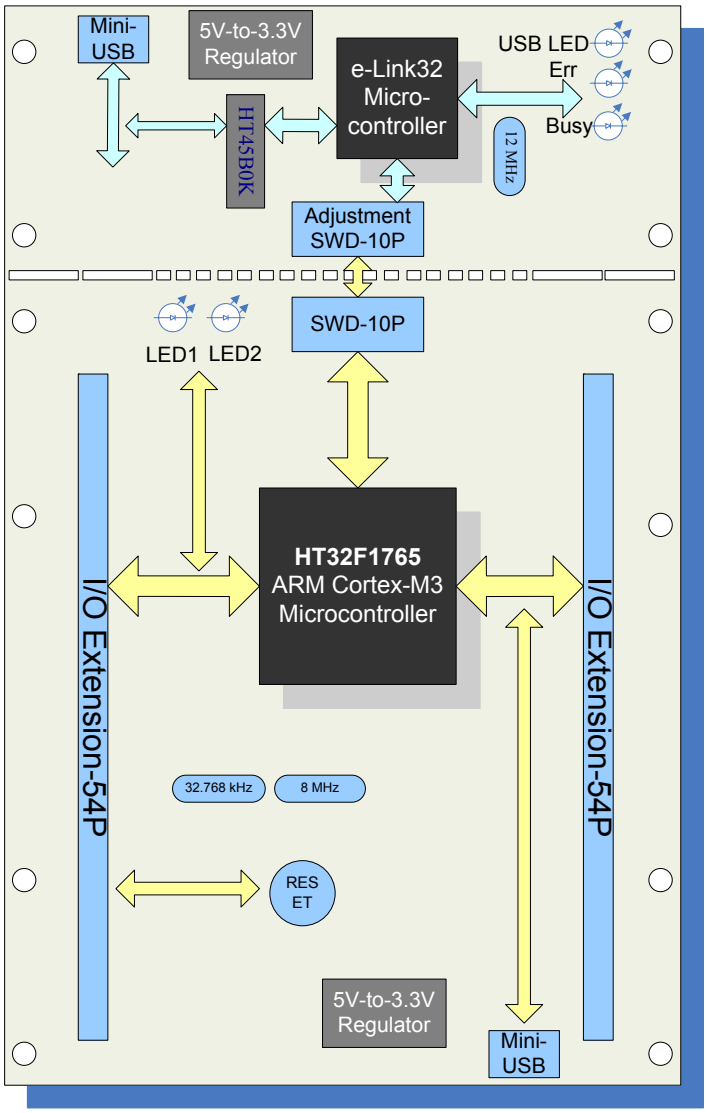


Figure 2. HT32F1765 Starter Kit Block Diagram

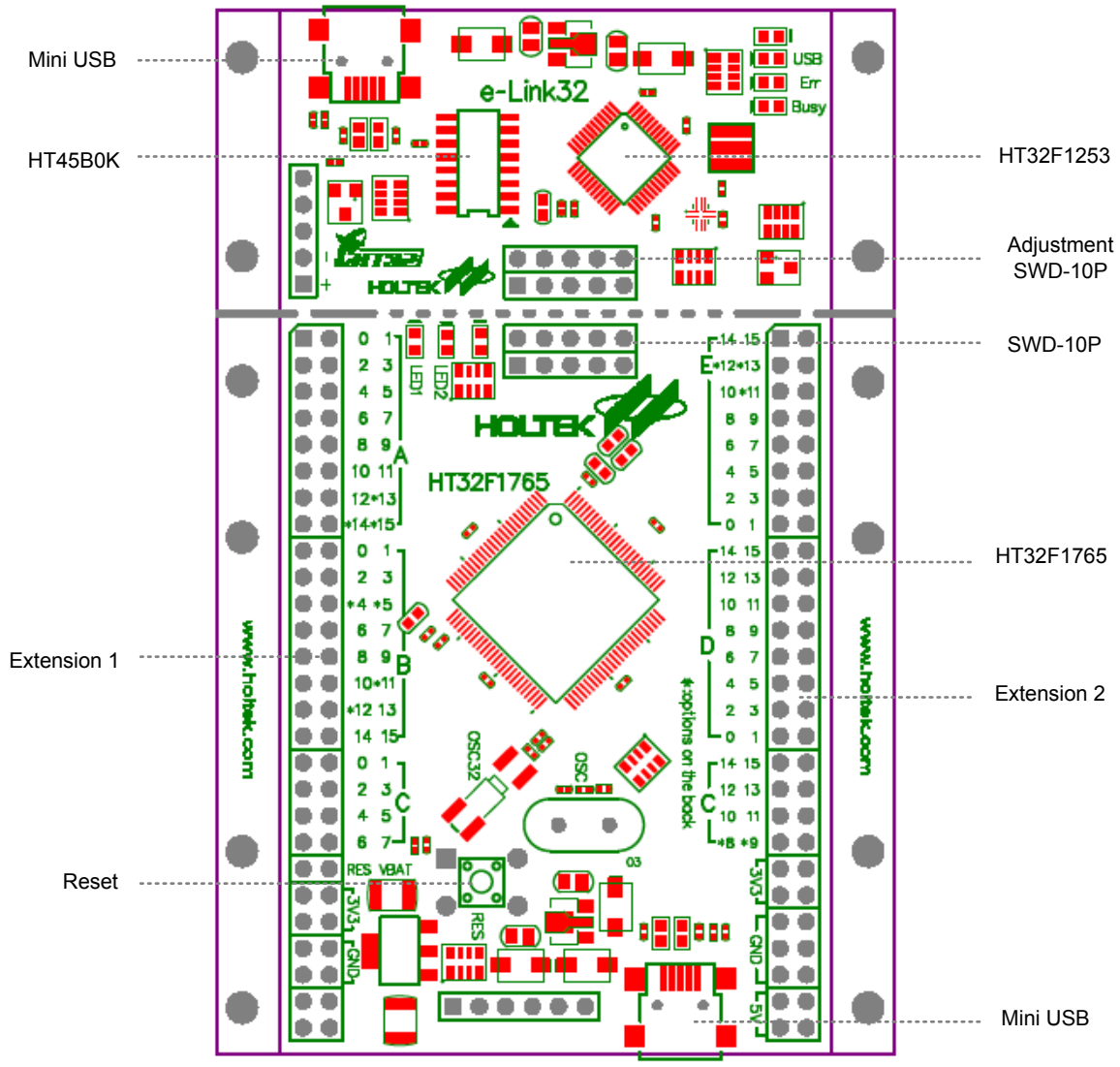
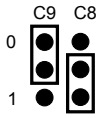
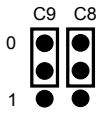
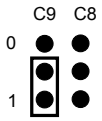


Figure 3. HT32F1765 Starter Kit Layout

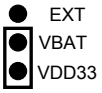
Boot Option – JP7, JP6

Table 1. Boot Jumpers

Jumper	Description
C8 & C9	Boot loader mode  Boot from the embedded boot loader.
	SRAM mode  Boot from the embedded SRAM.
	Main flash mode – default setting  Boot from the embedded main flash. BOOT0 (C8) don't care and BOOT1 (C9) = 1

V_{BAT} Option – JP9

Table 2. V_{BAT} Jumpers

Jumper	Description
VBAT	V_{BAT} pin is connected to 3.3V power - default setting 
	V_{BAT} pin is connected to 3V CR1220 battery.

LED Option – JP2, JP11

Table 3. LED1 Jumpers

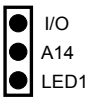
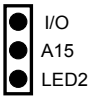
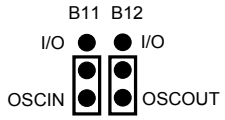
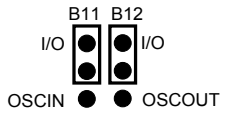
Jumper	Description
A14	LED1 connected with the extension I/O header and I/O port A pin 14 (A14) – default setting 
	A14 can only connect to extension I/O header.

Table 4. LED2 Jumpers

Jumper	Description
A15	LED2 connected with the extension I/O header and I/O port A pin 15 (A15) – default setting 
	A15 can only connect to extension I/O header.

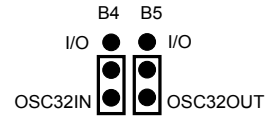
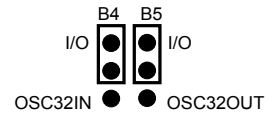
High Speed External Crystal Oscillator (HSE) Option - JP1, JP5

Table 5. HSE Jumpers

Jumper	Description
B11 & B12	HSE mode – default setting 
	I/O mode of I/O port B pin 11 (B11) and I/O port B pin 12 (B12). 

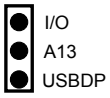
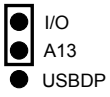
Low Speed External Crystal Oscillator (LSE) Option – JP3, JP4

Table 6. LSE Jumpers

Jumper	Description
B4 & B5	LSE mode – default setting 
	I/O mode of I/O port B pin 4 (B4) and I/O port B pin 5 (B5). 

USB Option – JP10

Table 7. USB Jumpers

Jumper	Description
A13	USB detect pin connected with the extension I/O header and I/O port A pin 13 (A13) – default setting 
	A13 can only connect to extension I/O header. 

SWD-10P Connector – JP26

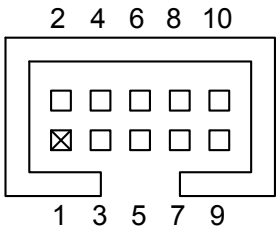


Figure 4. SWD-10P Connector

Table 8. SWD-10P Connector

Pin#	Description	Pin#	Description
1	3.3V	2	SWDIO (PE13)
3	GND	4	SWCLK (PE12)
5	GND	6	TRACESWO (PE11)
7	5V	8	NC
9	GND	10	Reset#

Adjustment SWD-10P Connector (for e-Link32 Lite) – JP27

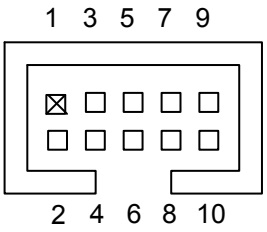


Figure 5. Adjustment SWD-10P Connector

Table 9. Adjustment SWD-10P Connector

Pin#	Description	Pin#	Description
1	3.3V	2	SWDIO (PE13)
3	GND	4	SWCLK (PE12)
5	GND	6	TRACESWO (PE11)
7	5V	8	NC
9	GND	10	Reset#

Extension Connector 1 – J31

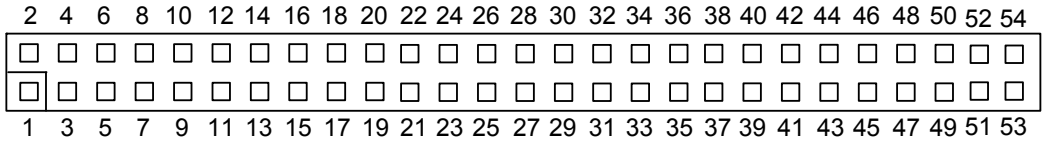


Figure 6. Extension Connector 1

Table 10. Extension Connector 1

Pin#	Description	Pin#	Description
1	A0	2	A1
3	A2	4	A3
5	A4	6	A5
7	A6	8	A7
9	A8	10	A9
11	A10	12	A11
13	A12	14	A13 (USB Option)
15	A14 (LED1 Option)	16	A15 (LED2 Option)
17	B0	18	B1
19	B2	20	B3
21	B4 (LSE Option)	22	B5 (LSE Option)
23	B6	24	B7
25	B8	26	B9
27	B10	28	B11 (HSE Option)
29	B12 (HSE Option)	30	B13
31	B14	32	B15
33	C0	34	C1
35	C2	36	C3
37	C4	38	C5
39	C6	40	C7
41	Reset#	42	VBAT (V_{BAT} Option)
43	3.3V	44	3.3V
45	3.3V	46	3.3V
47	GND	48	GND
49	GND	50	GND
51	NC	52	NC
53	NC	54	NC

Extension Connector 2 – J32

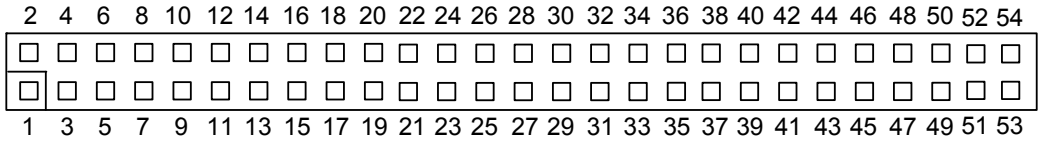


Figure 7. Extension Connector 2

Table 11. Extension Connector 2

Pin#	Description	Pin#	Description
1	E14	2	E15
3	E12 (SWCLK)	4	E13 (SWDIO)
5	E10	6	E11 (TRACESWO)
7	E8	8	E9
9	E6	10	E7
11	E4	12	E5
13	E2	14	E3
15	E0	16	E1
17	D14	18	D15
19	D12	20	D13
21	D10	22	D11
23	D8	24	D9
25	D6	26	D7
27	D4	28	D5
29	D2	30	D3
31	D0	32	D1
33	C14	34	C15
35	C12	36	C13
37	C10	38	C11
39	C8 (Boot Option)	40	C9 (Boot Option)
41	3.3V	42	3.3V
43	3.3V	44	3.3V
45	GND	46	GND
47	GND	48	GND
49	GND	50	GND
51	5V	52	5V
53	5V	54	5V

Mini USB Type B Connector – U3

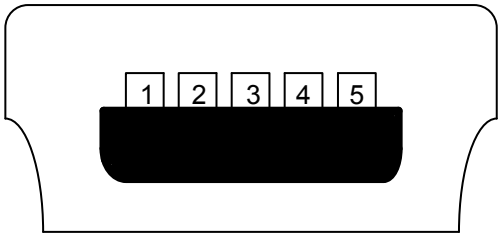


Figure 8. Mini USB Type B Connector

Table 12. Mini USB Type B Connector

Pin#	Description	Pin#	Description
1	USB_5V	2	D-
3	D+	4	NC
5	GND		

3 Schematics

This section shows the complete circuit of the HT32F1765 Starter kit:

- Figure 9 Includes the MCU, Boot Pins, SWD Connector, LED Display, Extension Connector and the Power.
- Figure 10 Includes the e-Link32 Lite.

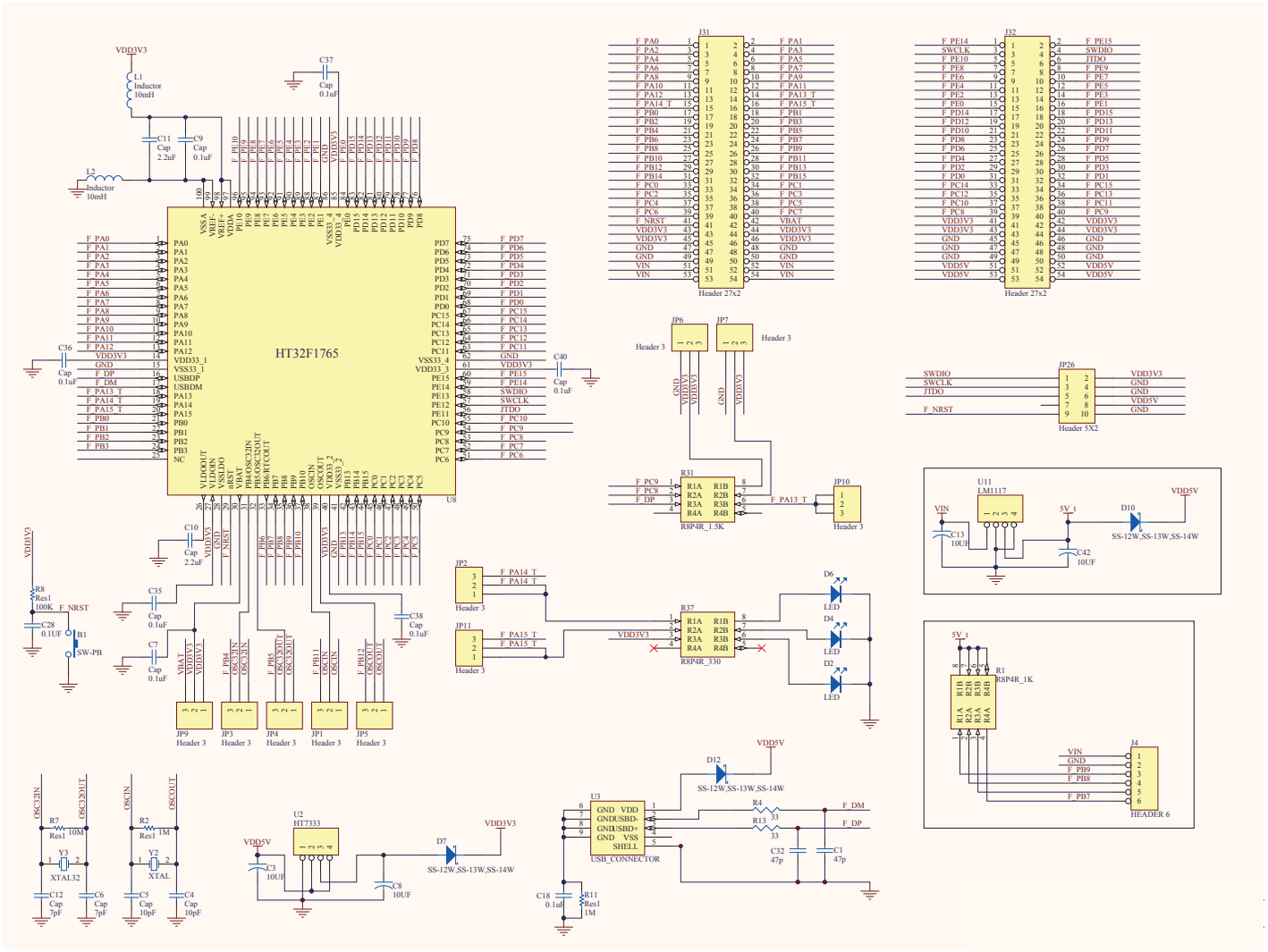


Figure 9. MCU, Boot Pins, SWD Connector, Extension Connector, LED and the Power

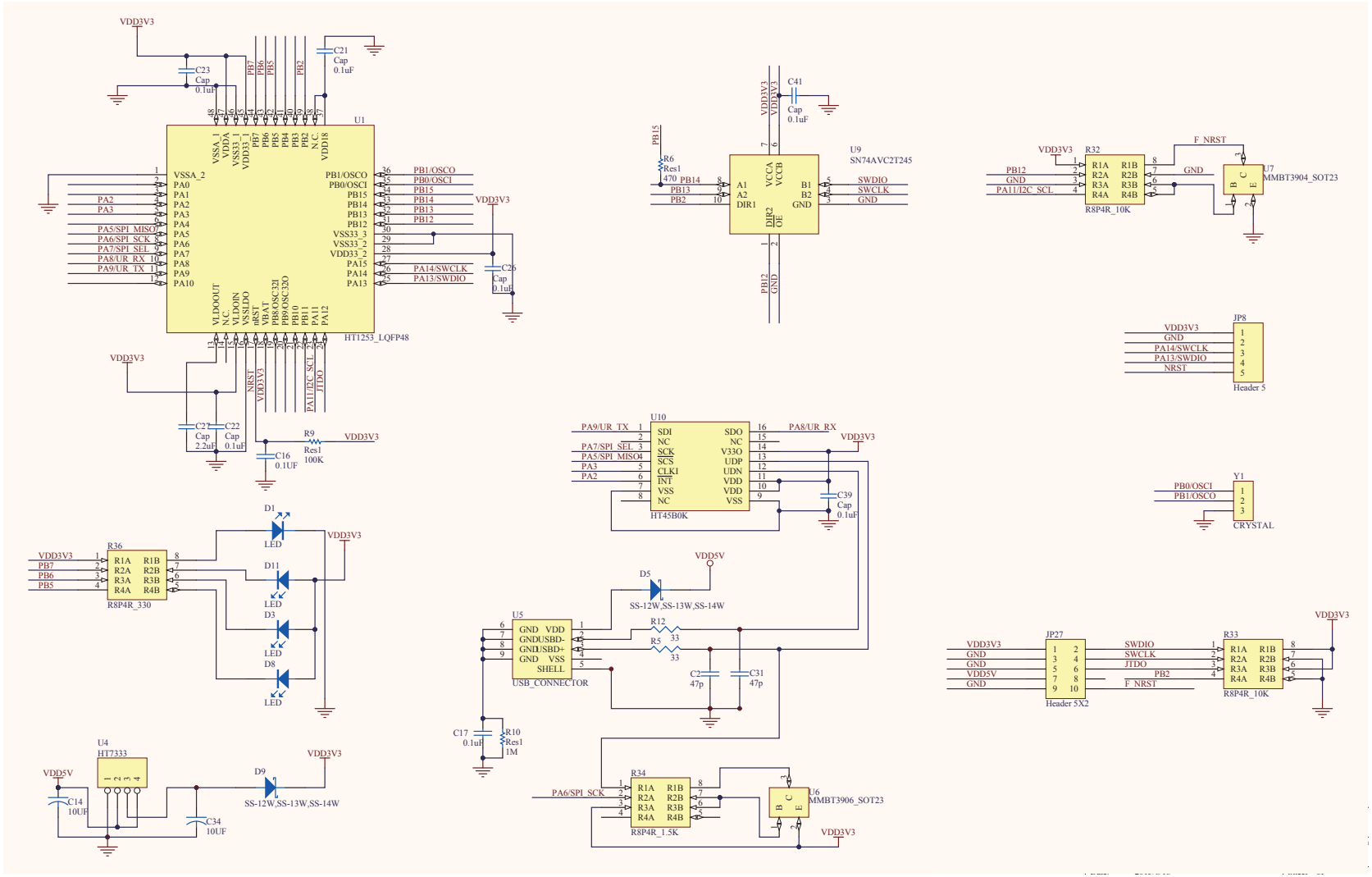


Figure 10. e-Link32 Lite

Copyright© 2015 by HOLTEK SEMICONDUCTOR INC.

The information appearing in this Data Sheet is believed to be accurate at the time of publication. However, Holtek assumes no responsibility arising from the use of the specifications described. The applications mentioned herein are used solely for the purpose of illustration and Holtek makes no warranty or representation that such applications will be suitable without further modification, nor recommends the use of its products for application that may present a risk to human life due to malfunction or otherwise. Holtek's products are not authorized for use as critical components in life support devices or systems. Holtek reserves the right to alter its products without prior notification. For the most up-to-date information, please visit our web site at http://www.holtek.com.tw.